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EXAMINER	
MAHMOOD, REZWANUL	

ART UNIT	PAPER NUMBER
2164	

DATE MAILED: 06/01/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/802,852	KODAMA, SHOJI	
	Examiner	Art Unit	
	Rezwanul Mahmood	2164	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *28 February 2006*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-30* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-30* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

SAM RIMELL
PRIMARY EXAMINER

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *8/25/05*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

1. This communication is in response to the Amendment filed on February 28, 2006.

Response to Amendment

2. Claims 1-30 are pending in this Office Action.

3. In view of the amendment filed on 02/28/2006, claim rejections under 35 U.S.C. 112 have been withdrawn.

Response to Arguments

4. Applicant's arguments with respect to claims 1-30 have been considered but are moot in view of the new ground(s) of rejection.

5. In response to applicant's arguments regarding the amended claims 1 and 11, the applicant argues that "Melahn and Shoup do not teach or suggest that a first hash value is used to determine whether the original file has changed and/or a second hash value is used to determine whether the format converted file has changed".

The examiner responds that the prior art in fact teaches the feature. The Shoup reference teaches about archiving files in original and format converted format (Shoup: Paragraph 5, lines 1-10). The Melahn reference teaches about computing hash value of each existing file and for each new version of the existing file to compare if the versions match (Melahn: Column 2, lines 32-43).

6. In response to applicant's arguments regarding the amended claim 21, the applicant argues that "Melahn and Shoup do not teach or suggest managing a relationship between an original file and a format converted file by storing in a first inode pointer to the original file and an inode number of a second inode, wherein the second inode points to the format converted file".

The examiner responds that Shoup in view of Melahn and further in view of Sawdon (US Publication 2003/0158873) does in fact disclose the feature above, as further explained in the following 35 U.S.C. 103 rejection.

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

8. Claim ~~1-30~~ 1 ~~are~~ is rejected under 35 U.S.C. 103(a) as being unpatentable over Shoup (2002/0147734) in view of Melahn (US Patent 6, 003, 042).

9. With respect to claim 1, Shoup discloses a storage system for storing an original file and at least one format converted file of the original file comprising:

a storage media (Shoup: Paragraph 15, lines 17-26); and

a file conversion unit which, in response to a request to store an original file,

converts the original file to at least one format converted file (Shoup: Item 22 in Figure 1; Figure 5; Paragraph 5, lines 1-10),

wherein said storage system stores the original file and the at least one format converted file on said storage media and manages a relationship between the original file and the format converted file to permit retrieval of either of the original file and the format converted file (Shoup: Paragraph 29, lines 1-12; Paragraph 30).

However, does not disclose expressly:

wherein said file conversion unit calculates a first hash value of the original file and a second hash value of the format converted file, and

wherein said first hash value is used to determine whether the original file has changed and/or said second hash value is used to determine whether the format converted file has changed.

The Melahn reference, however, discloses calculating hash value of existing files and new versions of existing files and comparing the hash values to determine if the existing or original files have been changed (Melahn: Column 2, lines 32-43).

At the time of the invention, it would have been obvious to a person of ordinary skill in the art, to have added the feature of calculating hash values of existing files to determine if the files have changed.

The suggestion or motivation of doing so would be to maintain data integrity and also to efficiently process data files in an archiving system (Shoup: Paragraph 2, lines 9-14).

Therefore, it would have been obvious to combine Shoup with Melahn for the

benefit of storing a file with multiple formats and to prevent data corruption.

10. Claims 2-30 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shoup in view of Melahn as applied to claim 1 above, and further in view of Sawdon (US Publication 2003/0158873).

11. With respect to claim 2, Shoup in view of Melahn discloses a storage system according to claim 1, however, does not disclose expressly wherein the relationship between the original file and the format converted file is managed by including a first inode that includes the first hash value and that further includes an inode number of a second inode that stores the second hash value.

The Sawdon reference, however, discloses a first inode including a first inode that includes first hash value and further includes an inode number for the second inode that stores the second hash value (Sawdon: Figures 2A, 2B, 3, 4, and 11).

At the time of the invention, it would have been obvious for a person of ordinary skill in the art, to have added the feature of managing the relationship between the original and format converted files using inodes.

The suggestion or motivation of doing so would be to provide dynamic links to file system snapshots (Sawdon: Paragraph 12, lines 3-4).

Therefore, it would have been obvious to have added Sawdon with Shoup and Melahn for the benefit of managing relationship between files with multiple formats.

12. With respect to claim 3, Shoup discloses a storage system according to claim 2, wherein said storage system determines whether the original file has changed or whether the format converted file had changed by reading a file pointed to by said first inode or said second inode, respectively, calculating a new hash value for the read file, and comparing said new hash value with a respective one of said first hash value or said second hash value (Melahn: Column 2, lines 32-43; Sawdon: Figures 2A, 2B, 3, 4, and 11).

13. With respect to claim 4, Shoup discloses a storage system according to claim 1, wherein said file conversion unit is external of said storage system (Shoup: Item 22 in Figure 1).

14. With respect to claim 5, Shoup discloses a storage system according to claim 1, wherein said first hash value is used to determine whether the original file has changed by

reading the original file pointed to by a first inode that stores the first hash value (Sawdon: Figure 2A),

calculating a first new hash value from the original file as read (Melahn: Column 2, lines 32-43), and

comparing the first hash value stored in the first inode with the first new hash value to determine whether the original file has changed (Melahn: Column 2, lines 32-43); and

wherein said second hash value is used to determine whether the format converted file has changed by

reading a second inode listed in said first inode for said format converted file (Melahn: Column 2, lines 32-43; Sawdon: Figures 2A, 2B, 3, 4, and 11),

reading the format converted file pointed to by the second inode (Sawdon: Figures 2A, 2B, 3, 4, and 11),

calculating a second new hash value from the format converted file as read (Melahn: Column 2, lines 32-43), and

comparing the second hash value stored in the second inode with the second new hash value to determine whether the format converted file has changed (Melahn: Column 2, lines 32-43).

15. With respect to claim 6, Shoup in view of Melahn discloses a storage system according to claim 1, wherein a directory list is maintained indicating a corresponding relation between the original file, formats to which the original file has been converted, information based on hash checks indicating whether the original file or the format converted file has changed, and information indicating a status of the change (Melahn: Column 2, lines 32-43; Shoup: Paragraph 30, lines 5-10; Shoup: Paragraph 29, lines 1-12).

16. With respect to claim 7, Shoup discloses a storage system according to claim 1, wherein checked hash values of original files and format converted files are used to

create a status table of the original files and format converted files, indicating whether the files are changed or unchanged and whether an unchanged format converted file is able to be reconverted to an original file format (Melahn: Column 2, lines 32-43; Shoup: Paragraph 30, lines 5-10; Shoup: Paragraph 29, lines 1-12).

17. With respect to claim 8, Shoup discloses a storage system according to claim 1, wherein a file is able to be stored at different locations on said storage media, on other storage media, or on other storage media of a remote storage system which is able to be accessed via a network based on a format of said file or a directory in which files are located (Shoup: Paragraph 15, lines 17-33).

18. With respect to claim 9, Shoup discloses a storage system according to claim 8, wherein storing of a file based on its format is conducted based on a file storing rule (Shoup: Paragraph 17).

19. With respect to claim 10, Shoup discloses a storage system according to claim 1, wherein a list of formats a file is stored in is able to be obtained (Shoup: Paragraph 29, lines 9-12; Paragraph 30, lines 5-10).

20. With respect to claim 11, Shoup discloses a method of storing an original file and at least one format converted file of the original file in a storage system which includes a storage media, said method comprising the steps of:

in response to a request to store an original file, converting the original file to at least one format converted file (Shoup: Paragraph 29, lines 1-12; Paragraph 30);

storing the original file and the at least one format converted file on the storage media (Shoup: Paragraph 15, lines 17-26);

managing a relationship between the original file and the format converted file to permit retrieval of either of the original file and the format converted file (Shoup: Paragraph 29, lines 9-12).

calculating a first hash value of the original file and a second hash value of the format converted file (Melahn: Column 2, lines 32-43); and

using said first hash value to determine whether the original file has changed and/or using said second hash value to determine whether the format converted file has changed (Melahn: Column 2, lines 32-43).

21. With respect to claim 12. Shoup discloses a method according to claim 11, wherein the relationship between the original file and the format converted file is managed by including a first inode that includes the first hash value and that further includes an inode number of a second inode that stores the second hash value (Melahn: Column 2, lines 32-43; Sawdon: Figures 2A, 2B, 3, 4, and 11).

22. With respect to claim 13, Shoup discloses a method according to claim 12, wherein said storage system determined whether the original file has changed or whether the format converted file has changed by reading a file pointed to by said first

inode or said second inode, respectively, calculating a new hash value for the read file, and comparing said new hash value with a respective one of said first hash value or said second hash (Melahn: Column 2, lines 32-43; Sawdon: Figures 2A, 2B, 3, 4, and 11).

23. With respect to claim 14, Shoup discloses a method according to claim 11, wherein a file conversion unit performs the converting and said file conversion unit is external of said storage system (Shoup: Item 22 in Figure 1).

24. With respect to claim 15, Shoup in view of Melahn discloses a method according to claim 11, wherein a file conversion unit performs the converting and said file conversion unit calculates the hash value of the original file and the second hash value of the format converted file, and

wherein said first hash value is used to determine whether the original file has changed by

reading the original file pointed to by a first inode that stores the first hash value (Melahn: Column 2, lines 32-43; Sawdon: Figures 2A, 2B, 3, 4, and 11),

calculating a first new hash value from the original file as read (Melahn: Column 2, lines 32-43), and

comparing the first hash value stored in the first inode with the first new hash value to determine whether the original file has changed (Melahn: Column 2, lines 32-43); and

wherein said second hash value is used to determine whether the format converted file has changed by

reading a second inode listed in said first inode for said format converted file (Melahn: Column 2, lines 32-43; Sawdon: Figures 2A, 2B, 3, 4, and 11),

reading the format converted file pointed by the second inode (Melahn: Column 2, lines 32-43; Sawdon: Figures 2A, 2B, 3, 4, and 11),

calculating a second new hash value from the format converted file as read (Melahn: Column 2, lines 32-43), and

comparing the second hash value stored in the second inode with the second new hash value to determine whether the format converted file has changed (Melahn: Column 2, lines 32-43).

25. With respect to claim 16, Shoup in view of Melahn discloses a method according to claim 11, wherein a directory list is maintained indicating a corresponding relation between the original file, formats to which the original file has been converted, information based on hash checks indicating whether the original file or the format converted file has changed, and information indicating a status of the change (Melahn: Column 2, lines 32-43; Shoup: Paragraph 30, lines 5-10; Shoup: Paragraph 29, lines 1-12).

26. With respect to claim 17, Shoup discloses a method according to claim 11, wherein checked hash values of original files and format converted files are used to

create a status table of the original files and format converted files, indicating whether the files are changed or unchanged and whether an unchanged format converted file is able to be reconverted to an original file format (Melahn: Column 2, lines 32-43; Shoup: Paragraph 30, lines 5-10; Shoup: Paragraph 29, lines 1-12).

27. With respect to claim 18, Shoup discloses a method according to claim 11, wherein a file is able to be stored at different locations on said storage media or on other storage media based on a format of said file (Shoup: Paragraph 15, lines 17-33).

28. With respect to claim 19, Shoup discloses a method according to claim 18, wherein storing of a file based on its format is conducted based on a file storing rule (Shoup: Paragraph 17).

29. With respect to claim 20, Shoup discloses a method according to claim 11, wherein a list of formats a file is stored in is able to be obtained (Shoup: Paragraph 29, lines 9-12; Paragraph 30, lines 5-10).

30. With respect to claim 21, Shoup discloses a system comprising:

a storage system which includes a storage media for storing files (Shoup: Paragraph 15, lines 17-26); and

a file conversion unit, which is connected to said storage system and which in response to a request to store an original file, converts the original file to at least one

format converted file (Shoup: Item 22 in Figure 1; Figure 5),

wherein said storage system stores the original file and the at least one format converted file on said storage media and manages a relationship between the original file and the format converted file to permit retrieval of either of the original file and the format converted file by storing in a first inode a pointer to said original file and an inode number of a second inode, said inode pointing to said format converted file (Shoup: Paragraph 29, lines 1-12; Paragraph 30).

31. With respect to claim 22, Shoup discloses a system according to claim 21, wherein said file conversion unit calculates a first hash value of the original file and a second hash value of the format converted file, and

wherein said first hash value is stored with said first inode, and is used to determine whether the original file has changed (Melahn: Column 2, lines 32-43; Sawdon: Figures 2A, 2B, 3, 4, and 11), and

wherein said second hash value is stored with said second inode, and is used to determine whether the format converted file has changed (Melahn: Column 2, lines 32-43; Sawdon: Figures 2A, 2B, 3, 4, and 11).

32. With respect to claim 23, Shoup discloses a system according to claim 22, wherein said storage system determines whether the original file has changed or whether the format converted file has changed by reading a file pointed to by said first inode or said second inode, respectively, calculating a new hash value for the read file,

and comparing said new hash value with a respective one of said first has value or said second hash value (Melahn: Column 2, lines 32-43; Sawdon: Figures 2A, 2B, 3, 4, and 11).

33. With respect to claim 24, Shoup discloses a system according to claim 21, wherein said file conversion unit is external of said storage system (Shoup: Item 22 in Figure 1).

34. With respect to claim 25, Shoup in view of Melahn discloses a system according to claim 21, wherein said file conversion unit calculates a first hash value of the original file which is stored with said first inode and a second hash value of the format converted file which is stored with said second inode, and

wherein said first hash value is used to determine whether the original file has changed by

reading the original file pointed by the first inode that stores the first hash value (Melahn: Column 2, lines 32-43; Sawdon: Figures 2A, 2B, 3, 4, and 11),

calculating a first new hash value from the original file as read (Melahn: Column 2, lines 32-43), and

comparing the first hash value stored with the first inode with the first new hash value to determine whether the original file has changed (Melahn: Column 2, lines 32-43; Sawdon: Figures 2A, 2B, 3, 4, and 11); and

wherein said second hash value is used to determine whether the format

converted file has changed by

reading the second inode whose inode number was stored in said first inode for said format converted file (Melahn: Column 2, lines 32-43; Sawdon: Figures 2A, 2B, 3, 4, and 11),

reading the format converted file pointed by the second inode (Melahn: Column 2, lines 32-43; Sawdon: Figures 2A, 2B, 3, 4, and 11),

calculating a second new hash value from the format converted file as read (Melahn: Column 2, lines 32-43), and

comparing the second hash value stored with the second inode with the second new hash value to determine whether the converted format file has changed (Melahn: Column 2, lines 32-43; Sawdon: Figures 2A, 2B, 3, 4, and 11).

35. With respect to claim 26, Shoup in view of Melahn discloses a system according to claim 21, wherein a directory list is maintained indicating a corresponding relation between the original file, formats to which the original file has been converted, information based on hash checks indicating whether the original file or the format converted file has changed, and information indicating a status of the change (Melahn: Column 2, lines 32-43; Shoup: Paragraph 30, lines 5-10; Shoup: Paragraph 29, lines 1-12).

36. With respect to claim 27, Shoup discloses a system according to claim 21, wherein checked hash values of original files and format converted files are used to

create a status table of the original files and format converted files, indicating whether the files are changed or unchanged and whether an unchanged format converted file is able to be reconverted to an original file format (Melahn: Column 2, lines 32-43; Shoup: Paragraph 30, lines 5-10; Shoup: Paragraph 29, lines 1-12).

37. With respect to claim 28, Shoup discloses a system according to claim 21, wherein a file is able to be stored at different locations on said storage media or on other storage media based on a format of said file (Shoup: Paragraph 15, lines 17-33).

38. With respect to claim 29, Shoup discloses a system according to claim 28, wherein storing of a file based on its format is conducted based on a file storing rule (Shoup: Paragraph 17).

39. With respect to claim 30, Shoup discloses a storage system according to claim 21, wherein a list of formats a file is stored in is able to be obtained (Shoup: Paragraph 29, lines 9-12; Paragraph 30, lines 5-10).

Conclusion

40. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within

TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Contact Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Rezwanul Mahmood whose telephone number is (571)272-5625. The examiner can normally be reached on m-f.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Charles Rones can be reached on (571)272-4085. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a

USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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SAM RIMELL
PRIMARY EXAMINER